Cal/EPA

Department of Toxic Substances Control

700 Heinz Avenue Suite 200 Berkeley, CA 94710-2737

February 14, 1997

Pete Wilson Governor

James M. Strock Secretary for Environmental Protection

Commander
Department of the Navy
Engineering Field Activity, West
Naval Facilities Engineering Command
Attn: Mr. Stephen Chao, Project Manager
900 Commodore Drive, Bldg. 101
San Bruno, California 94066-2402

Dear Mr. Chao:

DRAFT FINAL STATIONWIDE FEASIBILITY STUDY (SWFS), MOFFETT FEDERAL AIRFIELD

The Department of Toxic Substances Control(DTSC) and the San Francisco Regional Water Quality Control Board (RWQCB) have prepared following comments for your consideration. More comments will be submitted by the California Department of Fish and Game (DFG) in March 1997.

Significant improvements have been made in the subject report. The risk assessment summary and remedial alternatives sections are informative and provide a basis for all stakeholders to evaluate the remediation objectives and processes at MFA. However, there are still many unresolved issues as described below. Therefore, the State is requesting the Navy to submit a revised Draft Final SWFS after the completion of the Site Wide Ecological Assessment (SWEA) report.

If you have any questions, please contact me at (510) 540-3830 to ensure a coordinated approach for all regulatory comments.

Sincerely,

C. Joseph Chou
Remedial Project Manager
Base Closure Unit
Office of Military Facilities

Enclosures

AR

29180

cc: Mr. Michael Rochette
Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612

Mr. Michael D. Gill
U.S. Environmental Protection Agency
Region IX, Mail Stop H-9-2
75 Hawthorne St.
San Francisco, California 94105

Ms. Patricia Velez
California Department of Fish and Game
20 Lower Ragsdale Drive, Suite 100
Monterey, California 93940

Ms. Sandy Olliges
Assistant Chief
Safety, Health and Environmental Services
National Aeronautics and Space Administration
Ames Research Center
Moffett Field, CA 94035-1000

Mr. Peter Strauss
MHB Technical Associates
1723 Hamilton Avenue, Suite K
San Jose CA 95125

Mr. James G. McClure, Ph.D.
Moffett Field RAB, THE Committee
c/o Harding Lawson Associates
P.O. Box 6107
Novato, California 94948

GENERAL COMMENTS

1. The scope of Stationwide Feasibility Study (SWFS) should not be limited to wetland sediments and Golf Course Landfill 2. An integrated approach should be taken to include information from both the Station-Wide Human Health Risk Assessment and the Site-Wide Ecological Assessment (SWEA). The Navy should take this opportunity to evaluate remedial alternatives for potential risks to public health and environment at Moffett Federal Field (MFA). Cumulative risks associated with different media or operable units (OUs) should not be neglected in this report.

2. The State disagrees with the Navy that only areas with a total excess cancer risk above $1x10^{-4}$ have been evaluated in the SWFS. DTSC considers 10^{-6} as the point of departure for human health cancer risk assessment, areas with risks greater than $1x10^{-6}$ should be evaluated in the SWFS.

3. In this report, Hazard Quotients (HQ) and Hazard Indices (HIs) are used to determine adverse effects to ecological receptors at Moffett Field. HQ_1 and HQ_2 derived from high Toxicity Reference Values (TRVs); HQ_3 and HQ_4 from low TRVs respectively. It is DTSC's position that HQs derived from the low TRVs (HQ_3 and HQ_4) are the best indicators of possible adverse effects for most contaminants. The low TRVs were derived to be reasonable "low-risk" toxicity values. The low TRVs should not be viewed as overly conservative, since uncertainty factors were applied only when insufficient data were available (e.g. an unbounded lowest-observable-adverse-effect-level, (LOAEL)). No interspecies uncertainty factors were applied, nor were uncertainty factors applied to protect special-status species. HQ_3 and HQ_4 estimates less than one indicate there is low likelihood for adverse effects from the contaminant. HQ_3 estimates greater than one indicate there is a possible adverse effect upon several individuals in the population since the dose is an average over the contaminated area. HQ_4 estimates greater than one indicate there is a possible adverse effect upon individuals exposed to hot spots of contamination, or for species with small home ranges relative to the area contaminated. When the HQ_3 and HQ_4 estimates are greater than one, then more evaluation is needed to refine the estimates through either toxicity testing, laboratory studies, and/or field investigations. If there is confidence in the major components used to estimate HQ_3 and HQ_4, the Low TRV is the appropriate toxicity value from which to derive risk-based cleanup numbers because it represents a reasonable estimate of a chronic no-observed-adverse-effect-level (NOAEL) (although the final cleanup numbers may be higher based upon the other balancing criteria). The High TRVs were developed to provide estimates of dose levels at which significant adverse impacts can be expected on

individuals and are also possible at a population level (since the endpoints of the High TRVs are generally significantly increased reproductive impacts or other systemic effects on a majority of the treated animals). The HQs derived from the high TRVs (HQ_1 and HQ_2) should be used to indicate contaminants which are at levels high enough to warrant expedited removal actions.

4. Seven remedial alternatives were selected in this report. However, Alternative 3 through 7 are very similar in many aspects except the size of capping area. It is more like selecting cleanup standards other than identifying different remedial alternatives. The State encourages the Navy reevaluate all the candidates for remedial technologies and processes to assure more representative alternatives are included.

5. Future landuse plays a very important role in determining cleanup levels. The Navy should clearly address NASA's long term proposal or local government and community's reuse plan (if any) at MFA. Without future landuse plan, DTSC's position is that the Navy then should cleanup the base to unrestricted use levels.

SPECIFIC COMMENTS

1. Page 2; Section 1.1

The scope of Stationwide Feasibility Study should not be limited to sediments and Golf Course Landfill 2. An integrated approach should be taken, which includes information from both the Stationwide Baseline Human Health Risk Assessment and the Site-Wide Ecological Assessment (SWEA).

2. Page 3, 2nd Para.; Section 1.1

The first sentence, "Although groundwater monitoring is considered, groundwater cleanup is not included since cleanup actions have already been selected...", needs to be further clarified. More information regarding location(s) and objective of groundwater monitoring should be provided.

3. Page 3, 3rd Para.; Section 1.1

Please discuss the current status of petroleum corrective action program. In addition, it is unclear how the petroleum contaminated sediments and groundwater in the wetland area will be remediated.

4. Page 8, 3rd Para.; Section 1.2.3.2

The OU2-East no-action ROD was not necessarily based on "no risks to human health". More accurately, a "no action" risk management decision was made because the elevated concentration of beryllium at OU-2 East was determined naturally occurring.

5. Page 11, 3rd Para.; Section 1.2.3.7

"No information on the source of the material dumped in this area..." or "incidental dumping of excess soil, grass, brush..." does not explain the detection of VOCs, SVOCs, or TPHs at the site. Furthermore, information should be provided to support the conclusion that "closure of this area is not required".

6. Page 11, 4th Para.; Section 1.2.3.7

Please explain 1) what is the risk level for chlorinated solvents at Site 24; 2) if the existing groundwater water treatment system at Site 9 will be able to cleanup chlorinated organic compounds under Hanger 1?

7. Page 12, 4th Para.; Section 1.2.4

Please consider to include a MEW plume map in the report.

8. Page 13, 4th Para.; Section 1.3.1

DTSC has repeatedly commented on the SWRI report that the value of one-half acre was chosen for residential exposure area because, due to the sampling density, using a smaller exposure area did not change the results and because the one-half acre size provided a better graphical presentation. In any risk management decisions at Moffett Field regarding actual or planned future residences, any increase in risk as a result of the use of the larger exposure area size should be individually assessed, and if indicated, risks recalculated using an appropriate value for lot size. All these discussions should be included in the subject report.

9. Page 14, 3rd Para.; Section 1.3.1

Again, as we have mentioned in our comments on SWRI report, the DTSC default value for adherence of soil to skin is 1.0 mg/cm^2, not 0.2 mg/cm^2. Please summarize previous discussion on this issue and explain why the value of 0.2 mg/cm^2 was chosen by the Navy.

10. Page 15, 2nd Para.; Section 1.3.1

Please explain why the risk from recreational exposure was assessed in the SWRI report but not mentioned in this document.

11. Page 15, 4th & 5th Para.; Section 1.3.1

Please see General Comment Number 2.

12. Page 17, 2nd Para.; Section 1.3.2.1

Please briefly summarize why the three categories of Hazard Quotients (HQs) were chosen to evaluate potential risks in MFA. What are the differences between HQ=1, HQ=10 or HQ=100?

13. Page 17, last Para.; Section 1.3.2.1

Please note that motor oil was also found in surface water from the Eastern Diked Marsh.

14. Page 24, 5th and 6th Para.; Section 1.3.2.2

Please clarify what is the likelihood of adverse effects on salt marsh harvest mouse. In addition, the Navy should clearly define "high-", "moderate-" or "low-likelihood" of adverse effects.

15. Page 25, 4th Para.; Section 1.3.3

The State agrees with the Navy that the northeastern corner of the Eastern Diked Marsh, the stormwater retention pond inlet, and the Northern Channel are contaminated by PCBs, pesticides and metals. However, more areas were found with a total excess cancer risk of greater than 10^{-6} through the SWRI and should be considered as "potential risk areas" as well.

16. Page 30, 2nd Para.; Section 1.3.3.2

It is true that wetland might be used for nonpoint source pollution control or for other purpose. However, the contaminants removed from waste stream will remain in wetland and may pose potential threat to ecological receptors. In order to maintain high quality wetlands at MFA, the Navy should be responsible for the existing contaminants and coordinate with NASA to minimize future impacts.

17. Page 41, 3rd Para.; Section 2.1

Please see General Comment Number 1. The Remedial Action Objectives (RAO) for upland soil should be included in Section 2.1.

18. Page 42, 2nd Para.; Section 2.1.1.1

The COCs and chemicals of potential ecological concern (COPECs) identified in SWRI and SWEA are different from chemicals listed in Section 2.1.1.1. The statements "COCs identified in the HHRA requiring remediation..." and "COCs identified in the SWEA requiring remediation..." are confusing. Does that imply only some of the COCs require remediation but not all of them?

19. Page 42, 2nd Para.; Section 2.1.1.1

The Statement "There are no COCs for the landfill" seems incorrect to us. In Appendix E of the SWRI, 32 chemicals have been listed as COCs at Site 22.

20. Page 42, 3rd Para.; Section 2.1.1.1

Metals in sediments should remain as Chemicals of Concern (COCs) in alternative development process. The State recognizes that the spatial distribution of metal COPECs generally reflects the wetland drainage pattern, and relatively high concentration of metals in clay-size particles were found. However, the rationale provided by the Navy are argumentative and should not be used as the basis for screening out metals.

21. Page 43, 2nd Para.; Section 2.1.1.2.1

A total excess cancer risk above $1x10^{-6}$ and a non-carcinogenic hazard indices in excess of 1.0 should be utilized to establish human health risk-based Preliminary Remediation Goal (PRGs).

22. Page 45, last Para.; Section 2.1.1.2.2

According to our understanding, there is no "Ecological Risk-Based PRGs" have been approved by the State or USEPA Region IX. For surface water and benthic receptors, cleanup levels should be derived from site specific data. However, HIs could be used for mammalian and avian receptors.

23. Page 46, 2nd Para.; Section 2.1.1.2.2

It is inappropriate to select HI =100 as a cutoff point or overall cleanup level. There is not enough information to support that HI less than 100 will be protective to ecological receptors at MFA.

24. Page 52, 2nd Para.; Section 3.1

To our understanding, the COCs and COPECs have been determined through the studies of SWRI and SWEA. Unless the Navy is

proposing new COCs and COPECs lists; otherwise, technologies and process options should be based on previous decisions.

25. Page 52, 4th Para.; Section 3.1

Please see Specific Comment Number 20.

26. Page 75, 3rd Para.; Section 4.0

As it is stated in the third sentence of this paragraph, "The alternatives are structured around the range of attainment areas...", the only difference among Alternatives 3 through 7 is the size of capping area. It is more like selecting cleanup standards other than identifying different remedial alternatives.

27. Page 80, 2nd Para.; Section 4.0

In addition to no action (Alternative 1) or multilayer capping (Alternative 2), please also consider excavating and consolidating waste from Golf Course Landfill 2 into Site 1.

STATE OF CALIFORNIA PETE WILSON, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
101 WEBSTER STREET, SUITE 500
OAKLAND, CA 94612
(510) 464-1255

January 25, 1997
File No. 2189.8009 (MBR)

Mr. Joseph Chou
DTSC Region 2
Office of Military Facilities
700 Heinz Avenue, Suite 200
Berkeley, California 94710-2737

SUBJECT: RWQCB's Comments on the Draft Final Station-Wide Feasibility Study Report, November 8, 1996

Dear Mr. Chou:

Attached are RWQCB staff's comments on the above referenced report. Please contact me at (510) 286-1028 if you have any questions or comments.

Sincerely,

Michael Bessette Rochette

Michael Bessette Rochette
Remedial Project Manager

Attachment

RWQCB	San Francisco Bay Region	Department of Defense Section
Prepared By:	Michael Bessette Rochette	Phone No.: (510) 286-1028
Date:	January 25, 1996	File No.: 2189.8009 (MBR)
Subject:	Draft Final Station-Wide Feasibility Study, November 8, 1996	

General Comments:

1) The information provided in the Executive Summary describing the draft nature of this draft final version is appreciated and should help future readers understand the basis for the broad and significant comments from the agencies regarding the scope of this document. Since this is the first submittal that addresses potential ecological risks, albeit without a Final Station Wide Ecological Assessment (SWEA), it is appropriate that basic and fundamental comments on the scope and objective of remedial and mitigation actions be addressed at this phase. The Navy's openness does demonstrate a willingness to work together in achieving environmentally appropriate goals. These comments are presented in that spirit.

2) The Feasibility Study (FS) should present and compare of all risk levels and the associated remedial options. This information is then used to make risk management decisions on the final remedial strategy. Prescreening and the exclusion of risk evaluation of increased cancer occurrence of 1E-5 and 1E-6 is a risk management decision and not appropriate without prior agreement of the Base Closure Team (BCT). Incorporate risk evaluations for cancer occurrences of 1E-5 and 1E-6 for human health risk-based preliminary remediation goals (PRGs).

3) The use of HQ_1 and HQ_4 as criteria to determine remedial area without a full presentation the development of all HQs is inadequate. The basis of the criteria must be presented to support such a cleanup area evaluation.

4) The evaluation of impact associated with the numerical value of the HI and HQ is insufficient and must be further detailed prior to a remedial option selection based on any hazard value.

5) Incorporate risk evaluation of metals into the FS since its exclusion is a risk management decision to be made after reviewing a complete FS.

6) The exclusion of remedial options such as consolidation of the landfills and mitigation of wetlands in the evaluation is problematic. Based on lessons learned from the Operable Unit 1 RI/FS, evaluation of a wide scope of remedial options is imperative. The importance of being flexible and innovative is not being recognized by limiting the evaluation to such a narrow scope of remedial alternatives.

7) What is the feasibility of wetland mitigation as a remedial option? Is the Navy able to consider outright purchase of adjacent properties, e.g., Cargill Salt Evaporators, and create new wetlands? Alternatively, could the Navy consider funding existing Environmental Enhancement Projects or Public Education Projects as mitigation for wetland impacts, a partial list of potential projects is included as Appendix A to these comments.

8) The discussion regarding future land uses needs to be expanded. What is the Navy's plan if land use changes, would the Navy prohibit the development of wetlands if a particular remedial option is taken. Is the Navy concerned with addressing strictly the present uses and reevaluate the remedial strategy if land use changes in the future.

9) With identification of the Northern Channel as a potential risk area, operations at Building 191 need to be evaluated. Incorporate text describing present and future operation, discharge characterization, permit status, and remedial option evaluation.

10) The problem of continuing sources recontaminating proposed remediated areas needs to be addressed. Specifically, present a strategy to remove impacted sediments from the storm drain system. The strategy should map and propose remedial action for all the sumps, catch drains, and piping to identify and remove continuing sources.

Specific Comments:

1) **Page ES-2:** Please incorporate the basis for the statement, "...agencies accept destroying active and thriving wetlands..." or revise.

2) **Page 6, Sec.1.2.2, par. 3:** Revise the statement that no groundwater is pumped from the aquifers underlying MFA to include the recently identified groundwater pumping by NASA for industrial process water.

3) **Page 8, Sec. 1.2.3.1, par. 2:** Revise OU1 Rod time line.

4) **Page 11, Sec. 1.2.3.7, Site 23:** Identify the document in which the investigation results are presented.

5) **Page 12, Sec. 1.2.3.7, Weapons Storage Bunker:** Identify the document in which the investigation results are presented.

6) **Page 12, Sec. 1.2.3.7, Potential Runway Wetland:** Revise to incorporate the recent re-abandonment of the agricultural well.

7) **Page 14, Sec. 1.3.1, par. 2:** Incorporate a data table presenting the sampling depths and number of sample collected from each depth this section.

8) **Page 15, Sec. 1.3.1, par. 2:** Revise to incorporate dates, amounts, and references documents for the removal action performed by NASA.

9) **Page 15, Sec. 1.3.1.1:** See general comment 2.

10) **Page 15, Sec. 1.3.1.1, par. 2:** Please revise the description of Plate 1 in the text, since Plate 1 only shows boring locations and the exposure grid. Perhaps, this is a reference to Plate 2?

11) **Page 16, Sec. 1.3.1.2, par. 2:** See general comment 4.

12) **Page 18, Sec. 1.3.2.1, par. 2:** See general comment 4. Additionally, please verify reference to Menzie and others (1993) since 1992 is given in Section 7.0, References.

13) **Page 21, Sec. 1.3.2.1., par. 2:** See general comment 4.

14) **Page 22, Uncertainties:** What, if any, response was taken to mitigate the impact of these uncertainties.

15) **Page 25, 1.3.2.2:** Please evaluate any correlation between increasing HQ values and the potential impact from individuals to populations. Include a discussion addressing the HQ type.

16) **Page 26, 1.3.3.1, par. 1:** Clarification of horizontal and vertical velocities required.

17) **Page 27, 1.3.3.1, par. 2:** Provide the source of the effective porosity value, n = 0.4.

18) **Page 27, 1.3.3.1, par. 3:** Compare modeled groundwater gradient results to actual field data and discuss the inconsistencies. The text states that in the most conservative case, the fastest horizontal groundwater gradient is 0.33 feet per year (ft/yr). This value does not compare well with observed plume migration in the northern areas of MFA. For example, conservatively assuming a single source in the area of the flux ponds and neglecting dispersion, the chlorinated hydrocarbon plume within OU5 is approximately 1300 feet long, thus using the 0.33 ft/yr value, the date of release should have been approximately 4000 years ago. Please calculate horizontal groundwater velocities using observed field data.

19) **Page 27, 1.3.3.1, par. 4:** Are the groundwater velocities "actual groundwater velocities" based on field tests or are they modeled velocities. Include a discussion regarding the existence of the former stream channels and associated preferential groundwater pathways.

20) **Page 27, 1.3.3.1, par. 5:** Consider revising to, "A key parameter describing **a chemical's** degree..."

21) **Page 29, Conclusions:** The conclusions should be reevaluated using observed groundwater velocities. A comparison of modeled and observed values and pertinent discussion should be helpful.

22) **Page 42, 2.1.1.1:** See general comment 2. Incorporate the risks associated with metals is such a way that the reader can understand risk levels associated with ambient soil levels at 0 to 2 feet depth and the associated risk levels of metals in sediments transported in stromwater runoff. Following the completion of the Final SWEA, metals identified as a potential ecological risk should be addressed.

23) **Pages 43,45, and 47; Sec.s 2.1.1.2.1, 2.1.1.2.1(?), and 2.1.1.3:** See general comments 2, 3 and 4.

24) **Page 54; Sec. 3.1.4:** Removal of soil and sediment must address the first 2 feet since the risk assessment was based on the 0 to 2 feet horizon. A comparative risk analysis evaluating a variety of depths removed would be helpful.

25) **Pages 76 and 80; Sec.s 4.1 and 4.2:** See general comment 6.

26) **Plate 1:** This would be greatly improved if grid boxes that contained samples that were evaluated were shaded lightly. The base boundary does not accurately depicted in the area of the Fuel Pier.

27) **Plate 2:** This would be greatly improved if grid boxes that contained samples that were evaluated were shaded lightly. The base boundary does not accurately depicted

in the area of the Fuel Pier. The type of risk shown needs to be described in the Legend.

28) **Table A-4:** Groundwater Monitoring: List Title 23 CCR, Chapter 15, Article 5 as general groundwater monitoring requirements as it is described in the text. Additionally, complete the requirement description.

29) **Figure 2:** Please revise boundary to include the Fuel Pier and provide information describing its status.

30) **Figure B-2:** Please provide information describing the operation of the emergency pump station located in the north west corner of the stormwater retention pond.

Appendix A Mitigation Options

Environmental Enhancement Projects

San Francisco Joint Venture. Wants to create partnerships to acquire, restore and enhance wetlands. Contact Nancy Schaefer at 510-286-6767.

Martinez Regional Land Trust. Wants to buy land for wildlife habitat and recreation. Contact Tina Batt at 510-228-5460.

US Fish Wildlife Service, SF Bay National Wildlife Refuge. The Refuge has proposals for numerous marsh restorations from 100 to 1500 acres, $20,000 to > $1,000,000. Contact Betsy L. Radtke at 707-646-2434.

East Bay Regional Park District. The District has several proposals:

Oro Loma Marsh restoration, Hayward, $100,000
Point Pinole shoreline acquisition, Richmond, $500,000
San Pablo Bay acquisition and remediation, Rodeo, $500,000
Lake Chabot restoration, Castro Valley, $75,000
Spring redevelopment and wetland protection at several parks, $25,000
Crown Beach pond restoration, Alameda, $53,000
Miller/Knox Regional Shoreline lagoon restoration, Richmond, $110,000
Martinez Regional Shoreline marshland restoration, $250,000
Spring fed pond fencing in several parks, $41,250
Oyster Bay Regional Shoreline levee construction, San Leandro, $500,000
Point Pinole Regional Shoreline lead remediation, Richmond, $100,000

Contact the District at 510-635-0135 for further information.

Friends of the Creeks. This group has a variety of restoration and other projects along Walnut Creek. Contact Pam Romo at 510-939-8979.

Mill Valley Watershed Project. This group has a variety of restoration, education, and citizen monitoring projects in Mill Valley. Contact Jessica Fiorilo at 510-231-9423.

The Lake Merritt Institute. This group is proposing wetland restoration along portions of the Lake Merritt shoreline. Contact Richard L. Bailey at 510-238-2290.

Alameda County Resource Conservation District. The District is looking for funds to implement watershed management activities along southern Alameda Creek. $4000 to $50,000. Contact Marya Robbins at 510-447-0749.

San Mateo County Resource Conservation District. The District is looking for funds for a variety of projects in the Frenchmans Creek watershed by Half Moon Bay. $5000 to $30,000. Contact Tim Frahm at 415-726-4660 or 415-369-6393.

City of Danville. The City is looking for funds for four creek restoration projects; clean-up of San Ramon Creek, restoration of Cow Creek, restoration of Alamo Creek, and general creek clean-ups. Contact Christine McCann at (510) 820-1080.

Sierra Club. The Club wants to help restore wetlands at Crissy Field at the Presidio and is looking for $150,000 to $1.5 million for the project. Contact Arlene Gemmil at (415) 759-1925.

Friends of the Estuary. Seeking funds to assist with revegetation projects within the discharger's community ($1000 - $75,000). Contact Steve Cochrane at (510) 286-0769.

San Anselmo. Seeking funds to unculvert, clean out and stabilize creeks in the Sorich Park area. Contact Jerome C. Draper at (415) 457-3431.

Southern Sonoma County Resource Conservation District. Creek restoration in the Petaluma River watershed, including San Antonio Creek, requests up to $50,000. Contact Robin Davis at (707) 794-1242.

Friends of Orinda Creeks. Creek restoration and enhancement along Upper San Pablo Creek. Contact Cinda MacKinnon at (510) 253-9690.

East Bay Municipal Utility District. The District has several potential projects in the Upper San Leandro and San Pablo Reservoir watersheds. Funds needed vary from $5000 to $50,000. Projects include:

Evaluate septic systems in the watersheds.
Expand non-point source control programs in Orinda and Moraga.
Evaluate metals source in Indian Creek.
Revise educational brochures.

Contact Richard Sykes at (510) 287-1629.

Town of Danville. Clean up of San Ramon Creek and restoration of Cow Creek. Contact Christine McCann at (510) 820-1080.

City of El Cerrito. Restoration of Arlington Park Creek (up to $29,500). Contact Mori Struve at (510) 215-4367.

City of Martinez. Enhancement of Alhambra Creek (up to $846,845). Contact Jim Zumwalt at (510) 372-3563.

City of San Pablo. Restoration work along Wildcat Creek (up to $200,000). Contact Adele Ho at (510) 2115-3068.

City of Walnut Creek. Restoration work along Walnut Creek (up to $300,000). Contact F.J. Kennedy at (510) 943-5826.

Public Education Projects

Estuary Newsletter. General public education ($500 to $10,000) or specific story funding ($100 to $5000). Contact Ariel Rubissow Okamoto at 415-989-2441 or Kathryn Ankrum at 510-286-0734.

US Fish Wildlife Service, SF Bay National Wildlife Refuge. Numerous projects for public education materials, including booklets, brochures, and interpretive panels, ($30,000 to $150,000). Contact Betsy L. Radtke at 707-646-2434.

US Fish Wildlife Service, SF Bay National Wildlife Refuge. Looking for $8000 for education models and equipment. Contact Amy Hutzel at 510-792-0222.

East Bay Regional Park District. The District is looking for $15,000 for an environmental education interpretive panel at Lake Chabot Regional Park, Castro Valley. Contact the District at 510-635-0135 for further information.

Environmental Alliance. Proposes to buy a freeze dryer to establish wildlife exhibits at the Lindsay Museum in Walnut Creek. Cost is $14,598. Contact Dr. Mario Menesini at 510-935-1168.

Industry Initiatives for Science and Math Education. This group has a proposal for summer teacher fellowships in environmental education at $7800 to $8600 per teacher. Contact Kaye Storm at 415-326-4880.

San Francisco Estuary Institute. The Institute has several education proposals:

Kids in Creeks programs, $3000 to $100,000
Kids in Creeks Train the Trainer Workshops, $12,000 to $30,000
Kids in Creeks computer components, $5000 to $30,000
Teacher Action Grants program, $3000 to $45,000

Produce watershed booklet, $14,000
Promote citizen watershed protection, $25,000 to $35,000
Watershed festival, $20,000 to $30,000
Promote citizen watershed monitoring, $25,000 to $75,000
Annual educators conference support, $1000 to $15,000
Annual educators conference scholarships, $2000 to $10,000
Create color version of "Exploring the Estuary" computer program, $15,000
Purchase copies of "Exploring the Estuary" for schools, $2000 to $5000
Maintain and update "Exploring the Estuary", $3000 to $12,000

Contact Kathy Kramer at (510) 231-9539.

Local Government Commission, Bay Area Hazardous Waste Reduction Committee.
Proposes pollution prevention training for hospitals and medical facilities. Cost is $15,000. Contact Andrew Murray at (916) 448-1198.

Greenbelt Alliance. Proposes a Youth Outings Program ($10,000) and a Greenbelt Mapping and Assessment Program ($15,000). Contact Steve Van Landingham at (415) 543-4291.

Southern Sonoma County Resource Conservation District. Proposes an Adopt-A-Watershed program in the Petaluma River and Sonoma Creek Watersheds, requests up to $50,000. Contact Robin Davis at (707) 794-1242.

Friends of the San Francisco Estuary and Bay Area Stormwater Management Agencies Assoc. Propose a series of interconnected training and outreach programs to deal with pollution from construction activities. Specifically:

Field Manual - $25,000 to $50,000
Field Training - $3000 to $13,000
Responsible person certification program - $12,000 to $28,000
Resource Guide - $7000 to $15,000

Outreach and publicity - $5000 to $10,000

Contact Geoff Brosseau at (510) 286-0615.

Re Festival. This group seeks funding to continue to put on programs to teach children to reduce, reuse and recycle. Contact Malcolm Friedberg at (510) 530-0888.

Friends of the Estuary. Would like to team up with the discharger and existing groups in the discharger's community to provide environmental education programs on watersheds and wetlands to local schools ($2500-$75,000). Contact Steve Cochrane at (510) 286-0769.

San Francisco Estuary Project. Seeking funds for three projects; reprinting Bay/Delta Information Sheets and Status and Trends Reports ($1000-$10,000), revision and reprinting of booklet Introduction to the Ecology of the San Francisco Estuary› ($1000-$10,000), and co-sponsorship of biennial conference on State of the Estuary scheduled for October 10-12, 1996 ($1000-$5000). Contact Marcia Brockbank at (510) 286-0780.

Association of Bay Area Governments (ABAG). Proposes three projects for erosion control education. These are:

Erosion maps and information on the Internet
Education video on erosion control for homeowners
CD-ROM on erosion education

Seeking $50,000 for each project. Contact Jeanne Perkins at (510) 464-7934.

BayKeeper. Seeking funds to continue and expand high school student environmental education program (StudentKeepers). Seeking up to $28,635. Also seeking funds to for the BayKeeper Bay and Watershed Monitoring Program to train and equip volunteer monitors. Contact Marsha Mather-Thrift at (415)567-4401.

Earth Island Institute. Seeking $47,500 for project to educate public about pollution from two-stroke marine motors. This includes beginning a program to scrap these kinds of outboard motors. Contact Russell Long at (415) 788-3666.

City of San Pablo. Several environmental education projects; creeks ($2500 per class), stormwater ($400), marine science ($2000 per class), homeowner handbook ($15,000). Contact Adele Ho at (510) 2115-3068.

City of San Ramon. Several environmental education projects; creek awareness ($2400), stormwater ($1300), information signs and public access along creeks (up to $15,000), and teacher grants ($20,000). Contact Janice Carey at (510) 275-2241.

Notes:

1. The above are not listed in any order of preference or priority, rather in the order received. Also, projects do not have to be chosen from this list. Other projects may be proposed and will be accepted if they meet conditions contained in the Board's information package on Supplemental Environmental Projects dated July 12, 1995.

2. Wil Bruhns has copies of the complete proposals sent to the Board and should be contacted for further information at 510-286-0838.

3. This was last updated January 17, 1997.